

Before the
FEDERAL COMMUNICATIONS COMMISSION
 Washington, D.C. 20554

In the matter of)	
)	
Amendment of the Amateur Service Rules to)	
Facilitate Use of Spread Spectrum)	RM-11325
Communications Technologies)	
)	

To: The Commission

Comments of Alexander Krist, Amateur Radio Station KR1ST

May 2, 2006

I. Introduction

The following are my comments about the deletion of Part 97.311(d), except for the first sentence, as proposed by the Amateur Radio Relay League (ARRL). I have been a licensed Amateur Radio Operator for over twenty years and hold degrees in Electronics and Computer Technology. I am currently employed as a Programmer/Analyst.

II. Discussion

1. Intent of Petition

It seems that the ARRL submitted this petition to make Part 97 803.11b wireless networking more attractive than Part 15 803.11b wireless networking in order to “generate high interest and large recruitment”. See the Recommendation Section from the ARRL High Speed Multimedia Working Group Report -2002 in Appendix A. It is clear from this report that

the ARRL intends to attract new Amateur Radio Operators by offering them a competitive edge over manufacturers of Part 15 wireless technology.

2. Interference

Omission of the rule will result in the creation of a serious interference potential.

2a. Interference to Shared Services and Modes

The ARRL alleges that not a single case of interference has been reported by Amateur Radio Stations that share the same allocation where Spread Spectrum is permitted. It also alleges that restrictive rules are preventing Amateur Radio Operators from experimenting with Spread Spectrum. Indeed it is very logical conclusion that if very few people utilize a mode, very few people will be interfered by it. The ARRL could not have stated it much clearer that the current rules are effective in preventing interference, which always has been the intent of these rules.

2b. Interference and Propagation

Amateur Radio Operators chose to operate on certain frequency bands based on propagation characteristics. For long range terrestrial communications they chose the High Frequency (HF) bands because of the ability to use ionospheric propagation. The low Very High Frequency (VHF) bands are used also because of their ionospheric propagation properties in addition to tropospheric and other refractive propagation modes. These propagation modes allow for long range communications.

The application of Spread Spectrum as intended by the ARRL is inherently a local application, which is better suited for the Line of Sight (LOS) propagation mode. That calls for the application of the Spread Spectrum mode in a frequency spectrum where LOS is the primary mode of propagation, causing the least interference to shared modes and services.

This suggests that Spread Spectrum modes should only be allowed on frequencies above 420 MHz.

Increasing the Automatic Power Control limit to 100 Watts on low VHF frequencies and above will lead to a raise in the noise floor in an area much further away than the target area of the local Spread Spectrum communication due to propagation conditions.

3. Enforcement

The FCC Enforcement Bureau is already stressed for resources. Allowing for Spread Spectrum emissions without any Automatic Power Control on the VHF and higher frequency bands, will no doubt lead to more complaints filed with the Bureau. Since identification of a Spread Spectrum signal is no trivial matter, enforcement will be severely hampered requiring additional resources and investments on the part of the FCC.

III. Conclusion

Allowing for Spread Spectrum modes without Automatic Power Control requirements on VHF frequencies and above will lead to a significant interference potential and unnecessary enforcement requests and requirements. Especially on the lower VHF frequencies this interference potential is greater due to the nature of the propagation modes commonly found on those frequencies. Spread Spectrum modes should therefore not be allowed on frequencies below the 70 centimeter Amateur Radio Band.

The rules as they are currently in place have been very effective in negating the interference potential and allow for sufficient opportunity to experiment with Spread Spectrum modes.

Considering the foregoing, I would like to urge the Commission to not adopt the amendments to Part 97.311(d) as proposed by the ARRL.

Respectfully submitted,

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Appendix A

Source: <http://www2.arrl.org/announce/reports-03/hsmm.html>

ARRL High Speed Multimedia Working Group Report - 2002

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Accomplishments:

1. Prepared an introductory article on wireless LANs for publication in QST. Included are two sidebars. One describes an omni-directional horizontally polarized 2.4 GHz antenna design and the other describes using the APRSworld database to locate amateur 802.11b stations.
2. Activated the HSMM web page on the ARRL web server in December 2002. The page is updated periodically with input from HSMM Working Group members. We will continue to update the page and expand it as necessary to keep ARRL members and other amateur radio operators up to date on HSMM activities.
3. Determined the basic recommended operating parameters for an amateur 802.11b station. No specific protocol changes have been identified at this time.
3. Recommended to ARRL Board to raise APC power limit to 10 watts (see attachment 1).
4. Recommended to the ARRL board regarding HF data bandwidth requirements (see attachment 2).
5. Working with the APRS community, obtained 'ICON' to signify amateur 802.11b operation.

6. Working with Jim Jefferson, KB0THN, modified APRSWORLD database to more easily display amateur 802.11b stations.
7. Reaching out to the WLAN community to encourage effective liaison, recruitment, and technical coordination.
8. Evaluated various antenna configurations for optimum HSMM objectives
9. Determined that strict use of horizontal polarization would minimize potential interference to Part 15 users.
10. Identified several potential vendors of amateur HSMM antennas and started initial communications with the companies.
11. Built three prototype Horizontally Polarized Omni-Directional Antennas. The first was a failure, the last two where a success.
12. Defined and prioritized five key areas required to implement the ARRL 802.11b Protocol within the amateur radio community. Work is underway in all five areas.

Plans:

1. Prepare a Call for Papers for publication in the May issue of QST. Identify judging criteria. Deliver a Call for Papers presentation at the Dayton Hamfest in May 2003.
2. Develop a network architecture for the Hinternet.
3. Identify new protocols and protocol enhancements that will help us accomplish the architecture.
4. Judge the submitted papers. These will help guide the direction of Hinternet development.
5. Join other groups mailing lists, identify amateurs already active on them and target them and others involved for recruiting to the ARRL effort. Coordinate efforts to get HSMM message out a nationwide basis.
6. Develop construction articles and kits emphasizing increasing performance of off the shelf 802.11b gear. Two articles in the works include a 50-75 ohm power injector for the RFLINX amp (allows lower cost RG-6 to be used) as well as a power over Ethernet (POE) design for the LinkSys WET11 using step down switching regulators.

7. Continue to interface with antenna manufacturers to encourage them to bring to market, horizontally polarized omni-directional antennas for HSMM use.
8. Develop methods to tune and evaluate HSMM equipment in a quantitative way. This would include antennas, AP, & NIC cards.
9. Develop a high profile test site for 802.11B HSMM activity.
10. Prepare a presentation for the ARRL Technology forum at Dayton 2003 and for display at the ARRL booth.

Recommendations to the ARRL Board:

1. We need to be realistic. There is no significant advantage of Part 97 802.11b compared to Part 15 802.11b. If we expect to generate high interest and large recruitment, we need to make operating under Part 97 attractive. Potential ways to do this would be to:
 - A. Raise the APC level in the rules to 10 watts, perhaps eliminate it.
 - B. Pursue Part 97 Rule change to allow encryption of passwords.
2. Release to amateur radio hardware vendors requests for information (RFI) regarding their ability to provide the needed hardware including information on the expected market.
3. The ARRL Test Lab to plan for equipment evaluations directly relating to HSMM Part 97 operation. This would include antennas, access points, and network interface cards. Parameters typically not evaluated for Part 15 operation but significant for Part 97 operation would be the focus. Receiver Sensitivity, IMD, Bit Error Rate, Power Output, etc.
4. Consider pursuing expanding the 2.4 GHz band to 2483.5 MHz.